



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/531,417	06/02/2005	Toshiyuki Morii	P27750	7983
52123 7590 10/19/2007 GREENBLUM & BERNSTEIN, P.L.C. 1950 ROLAND CLARKE PLACE RESTON, VA 20191			EXAMINER LERNER, MARTIN	
			ART UNIT 2626	PAPER NUMBER
			NOTIFICATION DATE 10/19/2007	DELIVERY MODE ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

gbpatent@gbpatent.com
pto@gbpatent.com

Office Action Summary

Application No.

10/531,417

Applicant(s)

MORII, TOSHIYUKI

Examiner

Martin Lerner

Art Unit

2626

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 July 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 to 10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 to 10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

1. Claim 2 is objected to because of the following informalities:

The parentheses around the phrase “where n is a number of channels” should be removed from claim 2. The parentheses make it somewhat unclear whether the phrase “where n is a number of channels” is to be considered as a positive recitation of the claim or not.

Appropriate correction is required.

Claim Rejections - 35 USC § 101

2. 35 U.S.C. §101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

3. Claims 1 to 8 are rejected under 35 U.S.C. §101 because the claimed invention is directed to non-statutory subject matter.

Claims 1 to 8 represent non-statutory subject matter because these claims only set forth abstract mathematical elements, and are not directed to any real world physical entities. The elements of independent claim 1 are “an excitation vector waveform”, “a predetermined channel”, “a code”, “a codebook”, and “a predetermined algorithm”. Speech is a real world physical quantity, but abstract mathematical quantities for a method of coding are not. See MPEP §2106 to §2106.02.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1, 3, 4, 9, and 10 are rejected under 35 U.S.C. 102(b) as being anticipated by *Yasunaga et al.*

Regarding independent claim 1, *Yasunaga et al.* discloses a method of coding speech, comprising:

“an excitation waveform vector of a codebook divided into a plurality of channels capable of outputting a plurality of excitation vector waveforms” – an excitation vector generator has a fixed waveform storage section 181 (“a codebook”) for storing three fixed waveforms v1, v2, and v3 (“a plurality of excitation vector waveforms”) of channels CH1, CH2, and CH3 (“divided into a plurality of channels”); three fixed waveforms v1, v2, and v3 are stored in advance in the fixed waveform storage section 181, and fixed waveform arranging section 182 reads out (“capable of outputting”) fixed waveforms v1, v2, and v3 from fixed waveform storage section 181 (column 32, lines 5 to 26: Figure 18);

“wherein said coding method associates an excitation vector waveform candidate of a predetermined channel with an excitation vector waveform of another channel, and makes a code of an excitation vector waveform searched for by means of a

Art Unit: 2626

predetermined algorithm a code of an excitation vector of a codebook” – fixed waveform v1 is arranged at start position P1 selected from start position candidates for CH1, fixed waveform v2 is arranged at start position P2 for CH2, and fixed waveform v3 is arranged at start position P3 for CH3, as shown in Table 8; code numbers correspond, one to one, to a combination of selectable start position candidates of the individual fixed waveforms (column 32, lines 17 to 48: Figure 18: Table 8); broadly, fixed waveform v1 “associates” with fixed waveform v2 and fixed waveform v3 at start positions P1, P2, and P3 by an ordered array, in one to one correspondence, as shown by Table 8; that is, a first pulse position 0 of fixed waveform v1 is associated with a first pulse position 2 of waveform v2 and a first pulse position 4 of waveform v3, second pulse position 10 of waveform v1 is associated with second pulse position 12 of waveform v2 and second pulse position 14 of waveform v3, etc.

Regarding claim 3, *Yasunaga et al.* discloses a CELP type speech coder (Abstract), where the excitation information is used as a random codebook in a speech coder/decoder (column 32, lines 57 to 59); a stochastic codebook is known to be an equivalent term to a random codebook for speech coding by CELP.

Regarding claim 4, *Yasunaga et al.* discloses a CELP type speech coder (Abstract), where the excitation vector is provided from an algebraic codebook (column 62, lines 51 to 52; column 63, lines 18 to 19; column 65, lines 15 to 17; column 65, lines 29 to 31; column 66, lines 9 to 10).

Regarding claim 9 and 10, *Yasunaga et al.* discloses a random codebook for a CELP type speech coder/decoder (Abstract), and produces an excitation code vector (column 32, lines 5 to 14: Figure 18).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over *Yasunaga et al.* in view of *Mitsubishi (JP '097)*.

Yasunaga et al. searches for an excitation vector from random codebooks by a search algorithm, but does not expressly disclose a search algorithm of n-fold loops, where n is a number of channels, that changes an excitation vector waveform candidate within a loop in accordance with an excitation vector waveform candidate outside the loop. However, *Mitsubishi (JP '097)* teaches a method of voice encoding by CELP, where excitation vectors are selected by searching for vectors that have a minimum difference between an input voice signal and a synthesized voice signal. Specifically, a noise excitation vector is composed of four pulses, and a search is made sequentially by a quadruple loop of a 1st loop <LOOP1N> to a 4th loop <LOOP4N>. (Abstract) Thus, a 1st loop determines a first pulse, a 2nd loop determines a second pulse, a 3rd loop determines a third pulse, and a 4th loop determines a fourth pulse, where results of

the inner loops are affected by the results of the outer loops. One skilled in the art would recognize that an algorithm executed as a series of nested loops would be an effective iterative process for synthesizing an excitation vector of a speech coder because an objective is to minimize a difference between an input voice signal and a voice signal synthesized from the excitation vectors. It would have been obvious to one having ordinary skill in the art to produce the three fixed waveforms, corresponding to the three channels, of *Yasunaga et al.* by a search algorithm of nested loops as taught by *Mitsubishi (JP '097)* for a purpose of achieving an effective procedure for minimizing a difference between an input voice signal and a voice signal synthesized from excitation vectors.

Allowable Subject Matter

8. Claims 5 to 8 would be allowable if rewritten to overcome the rejection under 35 U.S.C. §101, set forth in this Office Action, and to include all of the limitations of the base claim and any intervening claims.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to Applicant's disclosure.

Li et al., Heinen et al., DeJaco et al., and Ojala disclose related art.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Martin Lerner whose telephone number is (571) 272-

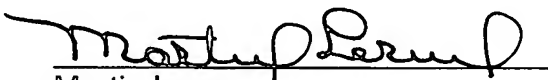
Art Unit: 2626

7608. The examiner can normally be reached on 8:30 AM to 6:00 PM Monday to Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David R. Hudspeth can be reached on (571) 272-7843. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

ML
10/11/07


Martin Lerner
Examiner
Group Art Unit 2626